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ALBERTA'S BLUEPRINT FOR WATER DEVELOPMENT



WATER RESOURCES DIVISION
DEVELOPMENT PLANNING BRANCH
DEPARTMENT OF AGRICULTURE
DIRECTOR R. E. BAILEY

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WHAT IS P.R.I.M.E.?

P.R.I.M.E. is a program conceived by the Water Resources Division, Alberta Department of Agriculture, to guide the development of the Province's water resources. The letters represent Prairie Rivers Improvement Management and Evaluation, a title which encompasses the full range of watershed management from conservation to development and utilization.



In Alberta, the water resources are adequate, and in some areas, even abundant. The pattern of availability of water over the calendar year, however, is often frustrating to the potential water user. In June, the rivers rise to their highest levels as a result of the combination of high precipitation and mountain snowmelt. Flows taper off during the summer and fall to the lowest levels in January during which flows are only a fraction of June peaks. Annual variations in total flow further complicate planning for water use.



Almost every farmer watching the snowmelt run off his land in the spring has wished he could hold this back for use later in the summer. On a larger scale, engineers have had the same thought. Under P.R.I.M.E., investigations are being carried out to determine the feasibility of storage of spring surpluses in certain headwater streams for release during periods of low flows. This would aid in flood control, pollution abatement, and increased water use.



In addition to variations in water availability over the year, there are problems of water distribution throughout the province. The greatest requirements for water are in southern Alberta where irrigation, industrial, domestic and municipal demands are well established. The largest rivers, however, are in the north carrying their water to the Arctic Ocean away from the centres of population. About 89 percent of the total water flowing through Alberta is carried by these northward-flowing rivers. The remaining 11 percent which flows through the southern populated areas of the province must service 85 percent of the population.

The logical solution to this problem of distribution is to divert northern waters southward where they are more urgently needed. Several imaginative schemes have been proposed for pumping lifts, large storage reservoirs, and long canals to transfer the northern water to southern Canada and the United States. The Alberta plan is more modest. Under P.R.I.M.E. it is proposed that as water in southern rivers becomes fully utilized, surplus water from neighboring basins will be diverted to augment the supply in water-short rivers. As the water of these rivers in turn becomes fully committed to a variety of uses, supplementary water will be brought in from still more northerly basins. Thus basin by basin, a transfer of northern waters to the south will be achieved. In many cases short gravity diversions are possible. In all cases only surplus water from storage reservoirs will be diverted thus protecting downstreams users dependent upon present supplies.



Under the P.R.I.M.E. program, a total basin development approach is taken. An inventory of each of the province's major river basins' water resources, both surface water and groundwater, along with the related land resources, will be completed. When the resource potential of each basin has been assessed, population projections and economic forecasts will be made to determine the level of future demands which can be anticipated.



The interdependence of water resource development with other resource development is becoming increasingly evident. In many cases the water resource provides the catalyst for other resource utilization. Lack of proper water resource development may lead to restricted economic activity within a basin. Individual P.R.I.M.E. projects will provide for improved water supplies for towns, industries, and farms, as well as facilities for watershed management, water-based recreation, and improved wildlife habitat. In total, P.R.I.M.E. presents to the people of Alberta an opportunity for imaginative, integrated planning for land and water development.

WHAT WILL P.R.I.M.E. DO FOR ALBERTA?

EVALUATION:

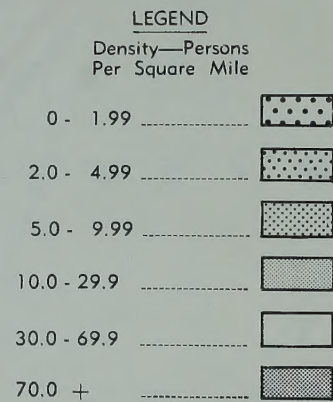
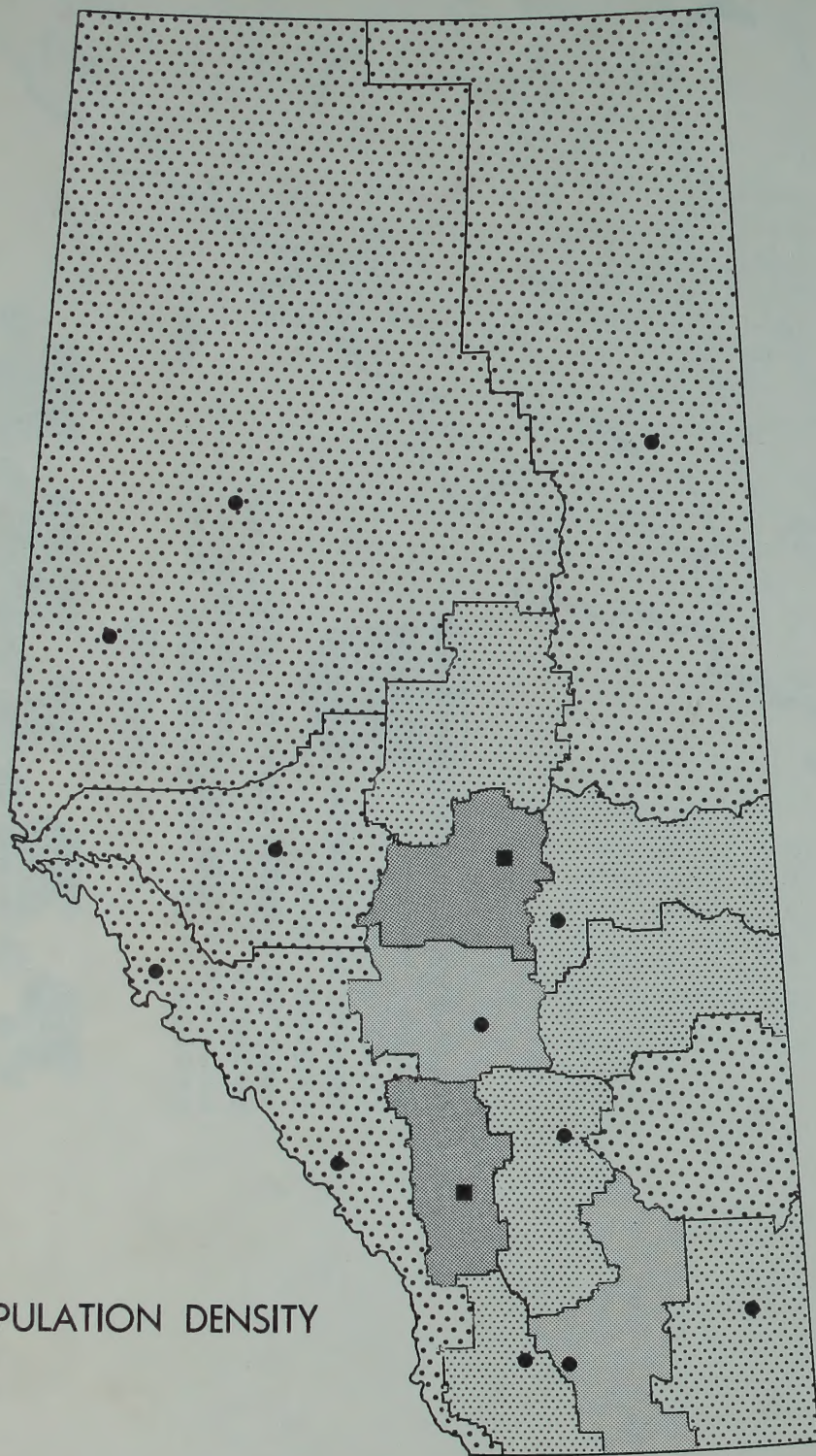
- inventory of the Province's water resources
- assessment of future water needs
- selection of sites for required water control works
- engineering feasibility studies
- economic feasibility studies

MANAGEMENT:

- transfer of water from areas of surplus to areas of deficiency
- construction of dams and reservoirs for flood control
- water conservation for downstream use by cities, industries, irrigators and stock
- provision of water areas for swimming, boating, and other recreational activities
- increased waterfowl and fish production
- allocation of water for future developments

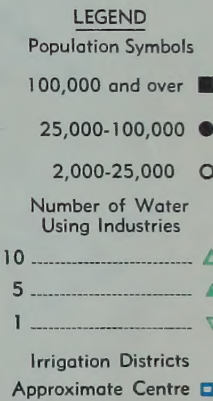
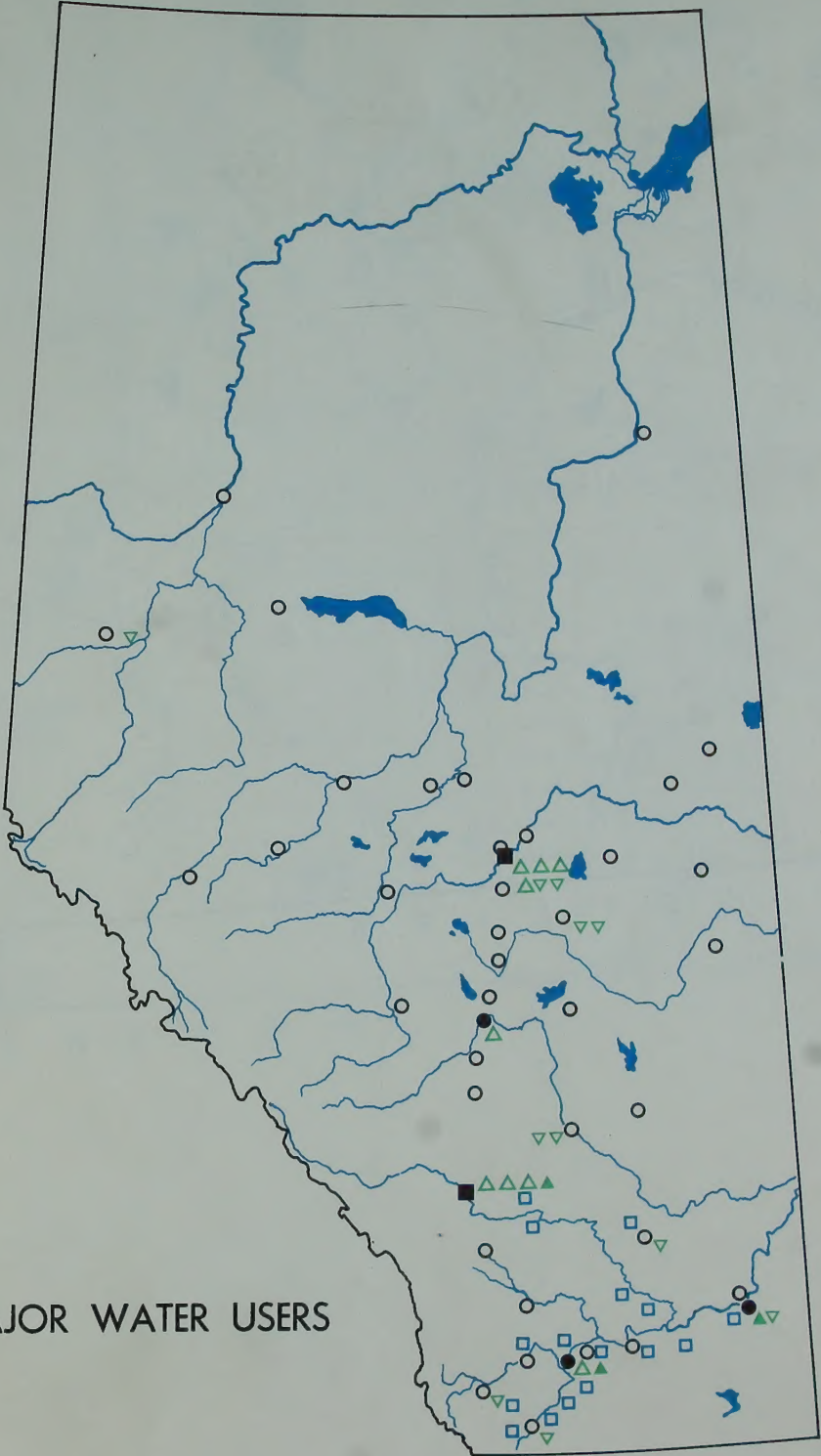
IMPROVEMENT:

- flow improvement
- water control
- erosion control
- pollution abatement



POPULATION DENSITY

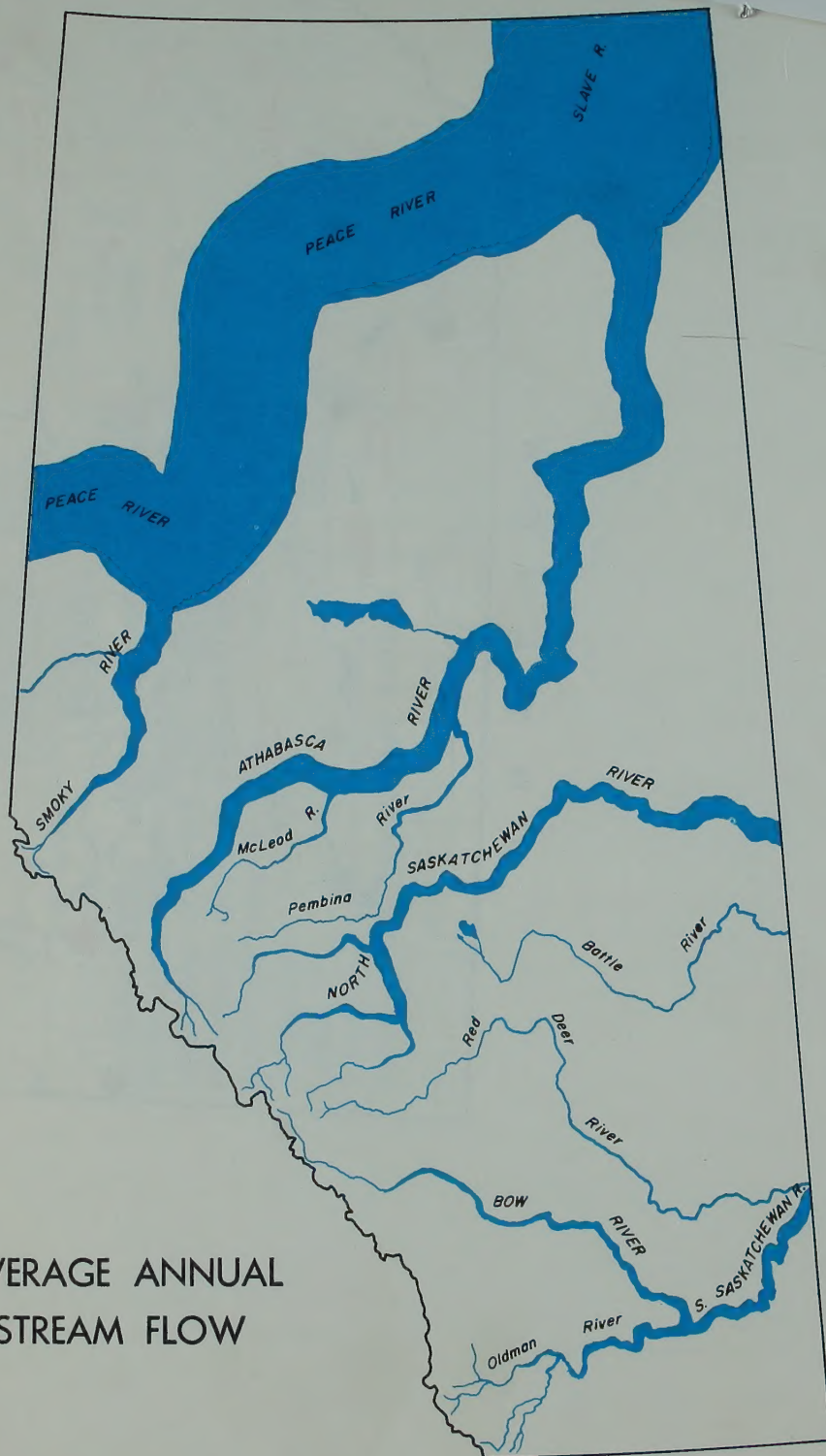
Source: Alberta Industry and Resources, 1968 Edition.



MAJOR WATER USERS

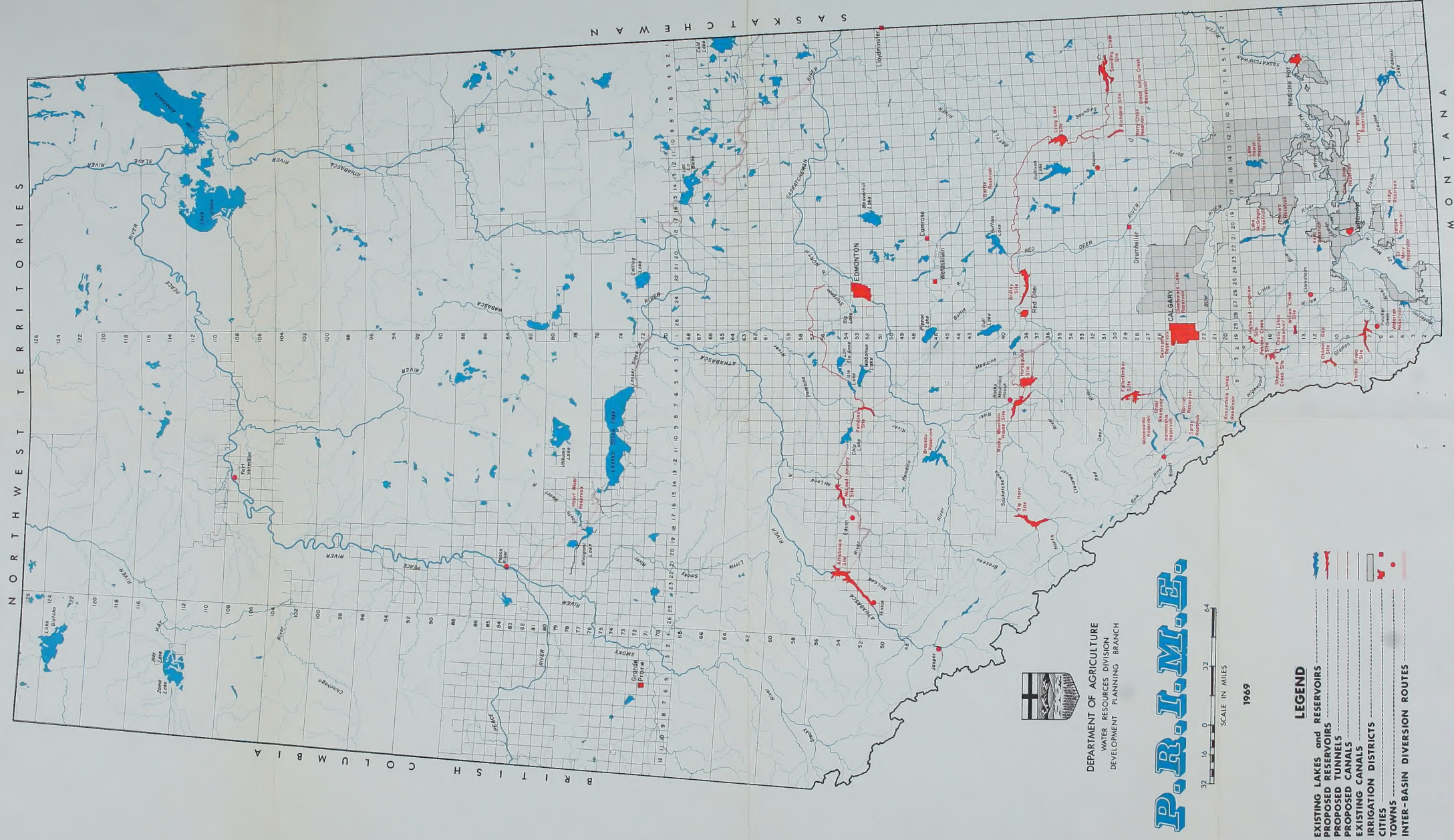
Source: Alberta Industry and Resources, 1968 Edition

AVERAGE ANNUAL STREAM FLOW



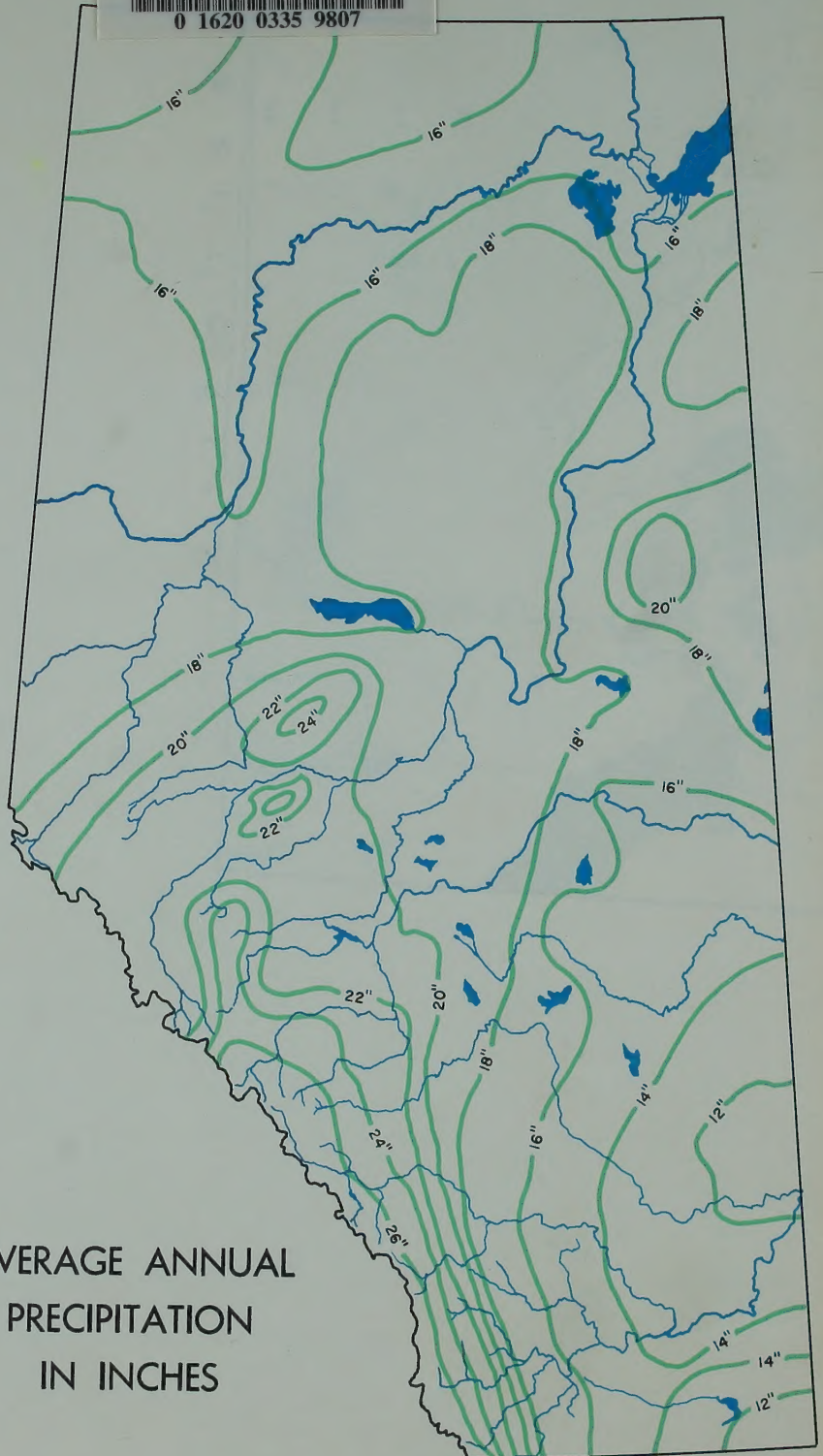
The stream flow diagram illustrates the discharge of water flowing in the major rivers of Alberta. The width of line indicates the relative volume of flow in each stream. As can be seen, the greater percentage of the total flow, some 87.5%, is northward into the Arctic watershed.

Scale: 1 inch = 50 million acre feet per annum





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